NAME: DATE:

p1020: graded take-home open-note practice exam (version 206)

Question 1

Let f represent a function. If $f[18] = 4$, then there exists a knowable solution to the equation below.

$$y = 6 \cdot f[28x - 38] + 7$$

Find the solution.

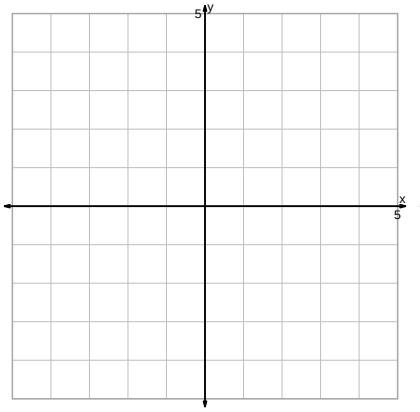
$x =$

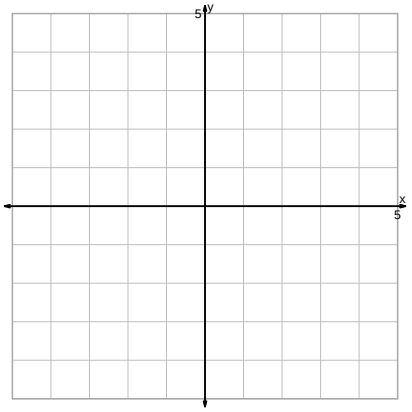
$y =$

Question 2

Graph the equations accurately. For each integer-integer point on the parent, indicate the corresponding point precisely. Also, with dashed lines, indicate any asymptotes.

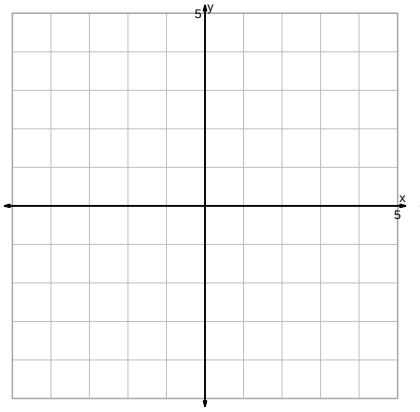
$y = \sqrt[3]{x} + 2$

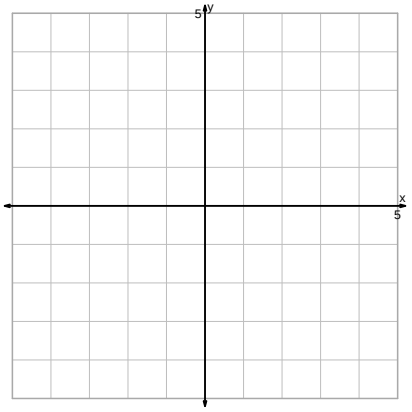




$y = \sqrt{x + 2}$

$y = \sqrt[3]{2x}$

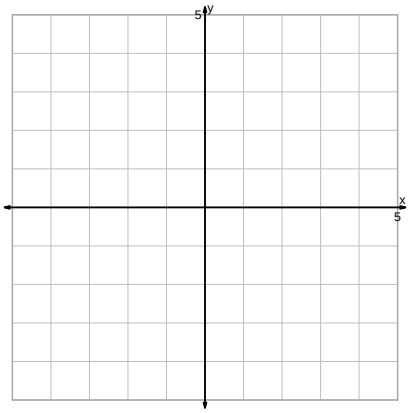


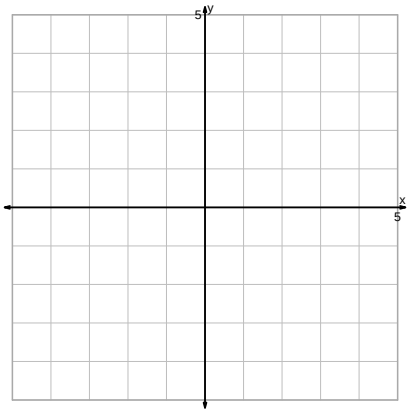


$y = x^2 - 2$

Question 2 continued...

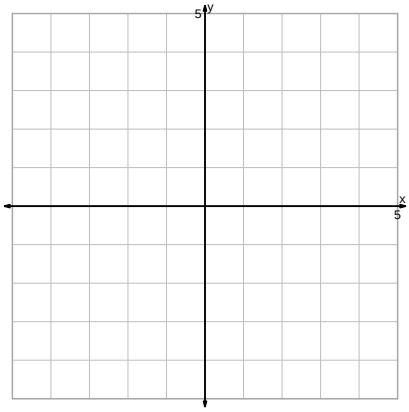
$y = -\sqrt{x}$

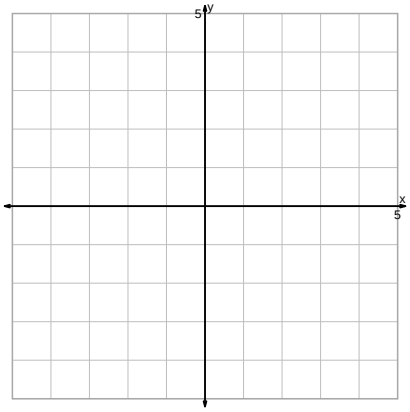




$y = \log_2\left(\frac{x}{2}\right)$

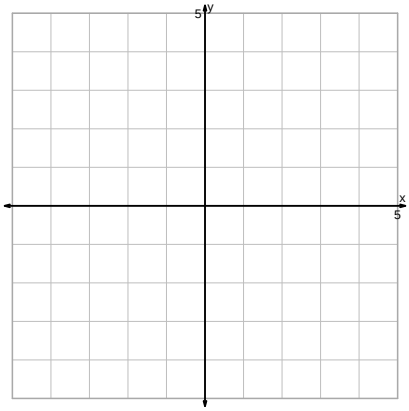
$y = 2^{-x}$

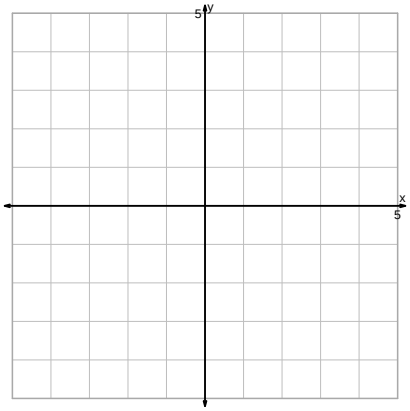




$y = 2 \cdot x^3$

$y = \frac{x^3}{2}$

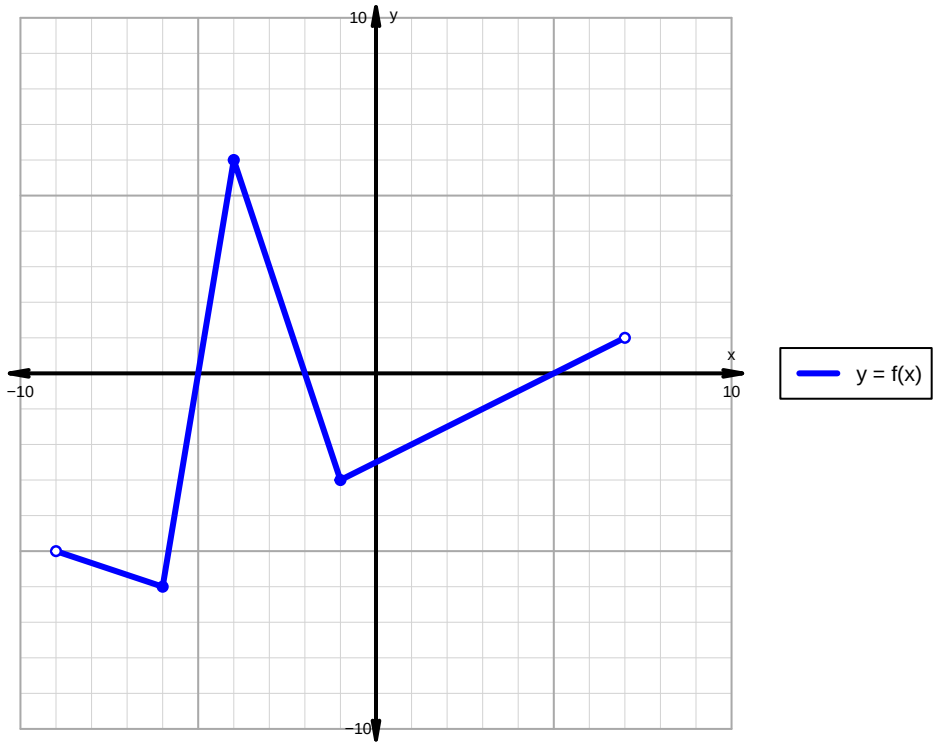




$y = \left(x - 2\right)^2$

Question 3

A function is graphed below.



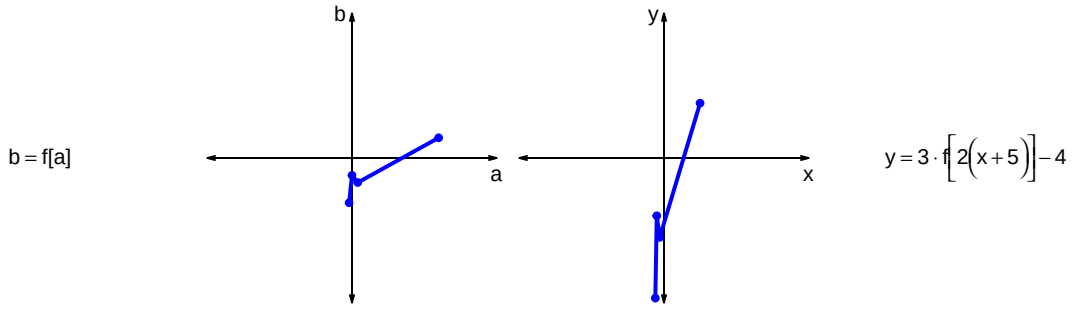
Indicate the following intervals using interval notation.

Feature	Where
Positive	
Negative	
Increasing	
Decreasing	
Domain	
Range	

Question 4

Let f represent a function. The curves $b = f[a]$ and $y = 3 \cdot f[2\,(x+5)] - 4$ are represented below in a table and on graphs.

a	b	x	y
-2	-31	-6	-97
0	-12	-5	-40
4	-17	-3	-55
60	14	25	38



a. Write formulas for calculating x from a and calculating y from b. (Or, write the coordinate transformation formula.)

b. What geometric transformations (using words like translation, stretch, and shrink), and in what order, would transform the first curve $y = f[x]$ into the second curve $y = 3 \cdot f[2\,(x+5)] - 4$?

Question 5

A parent square-root function is transformed in the following ways:

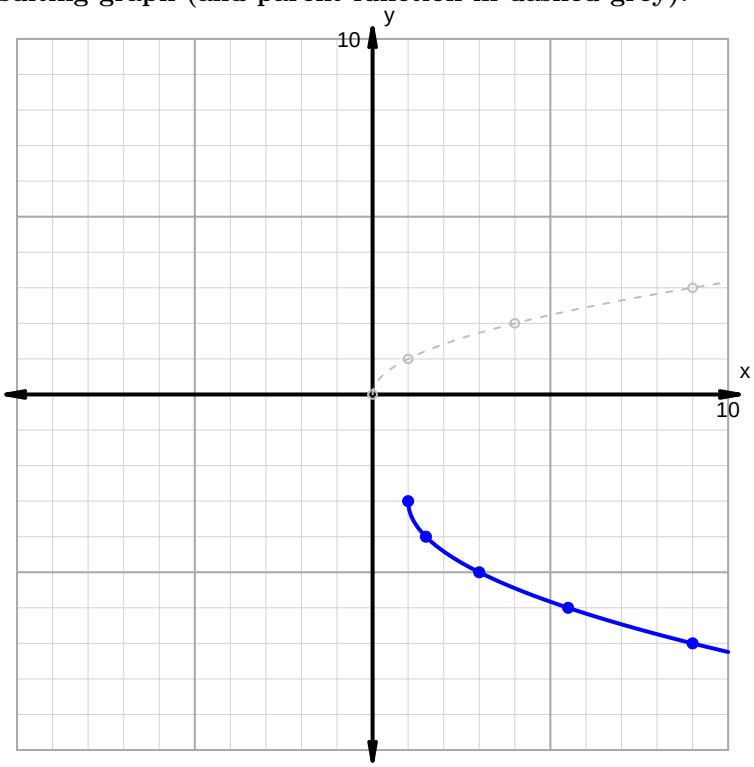
Horizontal transformations

1. Horizontal shrink by factor 2.
2. Translate right by distance 1.

Vertical transformations

1. Translate up by distance 3.
2. Vertical reflection over x axis.

Resulting graph (and parent function in dashed grey):

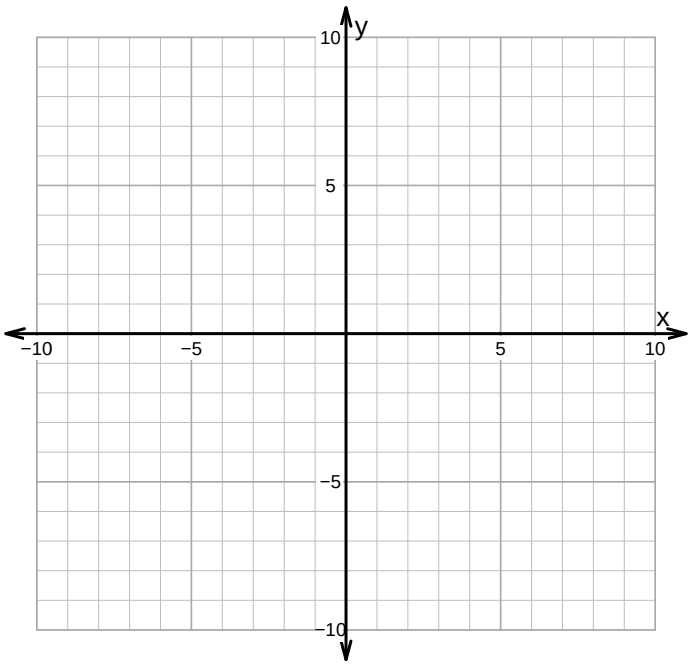


- What is the equation for the curve shown above?

Question 6

Make an accurate graph, and describe locations of features.

$$y \;=\; -3 \cdot |x - 5| + 9$$



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Range	
Positive	
Negative	
Increasing	
Decreasing	